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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/809,004 | 03/25/2004 | Shoup Chen | 87976SLP | 7773 |
| 70523 | 7590 | 02/13/2009 | EXAMINER | |
| Carestream Health, Inc. 150 Verona Street Rochester, NY 14608 | | | LAMPRECHT, JOEL | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3737 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/809,004 | CHEN ET AL. | |
| | Examiner | Art Unit | |
| | JOEL M. LAMPRECHT | 3737 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 19 November 2008.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-31 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le (US 6,608,942) in view of Yokoi et al (US 2003/0023150 A1) and in further view of Ravkin (US 6,259,807 B1). Le discloses a digital image processing method comprising acquiring image data (Col 2 Lines 5-40), detecting discontinuities (Col 2 Line 12-55), preserving edges and other significant structure (Col 9 Line 29-62), and adjusting the exposure of the image with the discontinuity preserved (Col 12 Line 55 – Col 13 Line 60), including thresholding the images (Col 12 Line 35-60), forming multiple masks from

a thresholded image (Col 14 Line 10-65), and adjusting the properties (Col 15 Line 45 – Col 16 Line 42), including intensity variations, extremes, and contrast via those masks (Col 16 Line 49 – Col 17 Line 48). The development of those adjustments includes the creation of a smoothing band across a boundary (Col 17 Line 48 – Col 18 Line 65), and using gradients for color components to perform morphological filtering operations (Col 12 Line 17 – Col 13 Line 67). Additionally, Le uses masking alongside of filters to remove or preserve discontinuities from the images selectively (Col 14 Line 15-24), selectively intensify regions of the image based on threshold intensities on a scale (Col 16 Line 28 – Col 17 Line 25), and smoothing based on a selective width around a boundary line where intensity, and gradients thereof, provide a basis for smoothing (Col 8 Line 25 – Col 10 Line 20). Furthermore, the disclosure of Le provides a notification of a discontinuity to a remote site (Col 6 Line 40 – Col 7 Line 25), and an examination bundle processing system for transmitting data from the processed images to an external source or to a display means (Col 7 line 10-25).

Le does not disclose the acquisition of images from an in vivo camera system, or a wireless communication link between the image processing system and the in vivo camera system coupled to a Personal Digital Device or provide a specific step-by-step mask generation and modification in such simple terms. Attention is then paid to the secondary reference by Yokoi et al, which discloses a method for acquiring in vivo image data (0062), wirelessly transferring that data to a personal digital device and then to a computer for processing (0073). Additionally, attention is directed to Ravkin ('807) which explicitly describes and defines a masking method which uses threshold image

adjustments, multiple mask formations and adjusting image brightness values with the masks used (Col 11 line 65- Col 13 Line 10, Col 8 Line 10-55, Claims 13-17). Ravkin further discloses the preservation of specific targeted regions of the body through the use of sequential exposure using a modified illumination beam for the purpose of providing either two separate images or a combined image for thresholding and masking processing (Steps 5 and 6, Col 8 Line 6 – Col 9 Line 7, step 7.1 and 7.2) as well as identification of specific regions or clusters which are anatomically significant during the diagnostic procedure (Step 5, Col 8 Line 25-44). It would have been obvious to one of ordinary skill in the image processing and medical image diagnosis field to have incorporated the in vivo image acquisition system of Yokoi et al, and the specific outline of mask formation and adjustment of Ravkin with the image processing system of Le to allow for the analysis and processing of image data acquired internally of a patient's condition.

Response to Arguments

Applicant's arguments filed 11/9/08 have been fully considered but they are not persuasive.

Regarding the arguments levied against the Le reference, namely that Le does not disclose a processing method for exposure adjustment by correcting brightness of select areas while preserving intensity of select regions of the image, Examiner respectfully disagrees. The system of Le et al, as cited above, retains brightness in selected regions based on the masks and morphological operators in the processing algorithm so as to selectively target discontinuities (see crease in the Arguments; p11)

and perform smoothing and intensity modification on those areas. In the process described by Le, only the edge data is modified for intensity and smoothing (and other) functions, thus preserving the anatomical structure of the non-crease data (the anatomical structure itself). Furthermore, the detection and processing algorithms of Le are used for preservation of structure, not for the "loss of detail" as argued but not claimed. The selective application of "bright to dark or dark to bright" therefore incorporates the smoothing band across a boundary or crease in order to adjust the image using intensity values. There is no specific mention in claim 1 as to which specific anatomical structures are preserved and which are modified other than to say that some areas of lesser intensity are preserved. Specific adjustment, correction of brightness, or discerning processes which would be used to decide on the pixels which fall into each category are not claimed therein, and therefore not required by the limitations of claim 1. Regarding the arguments levied against claim 20, in particular, the formation of a "skeleton image of the threshold image and detection of structures or areas of lesser intensity, Examiner has relied upon the Ravkin reference (step 160) for the binary image thresholding process which selectively identifies "on" and "off" features so as to allow for identification of particular regions and formation of masks. The threshold as stated in Ravkin can be modified to suit applicable target values and form areas of interest within the image.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on 8:30-5:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art
Unit 3737

JML